

Exhibit "B"

Part 2 of 10

BIOLOGICAL OPINION
of the
U.S. FISH AND WILDLIFE SERVICE
for
ROUTINE MILITARY TRAINING and TRANSFORMATION
of the
2nd BRIGADE 25th INFANTRY DIVISION (Light)
U.S. ARMY INSTALLATIONS
ISLAND of OAHU



October 23, 2003
(1-2-2003-F-04)

Exhibit "B"
Part 2 of 10

0024294

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species. The Partnership was created in 1999 through a Memorandum of Understanding signed by Koolau Mountain landowners. The Koolau Mountains Watershed Partnership facilitates watershed protection and conservation projects, maximizes available resources, and optimizes information exchange and learning. Partners include the Hawaii Department of Land and Natural Resources, the Honolulu Board of Water Supply, the Waiahole Water System, Kamehameha Schools, The Queen Emma Foundation, the United States Army, the Department of Hawaiian Home Lands, Bishop Museum and the Service. The partnership is an initiative sponsored by the Hawaii Department of Land and Natural Resources. The Koolau Mountains Watershed Partnership consists of approximately 39,450 ha (97,500 ac). The partners agree that the proactive management of watershed is crucial in eliminating or reducing the threats of damage from weeds, insects, disease, feral ungulates, and human impacts. Partners will work together to develop watershed projects and cooperate to obtain funds for these projects. The Koolau Mountains Watershed Partnership partners meet monthly. Projects may combine one or more activities such as fencing, weed control, ungulate control, restoration and revegetation, stream health and water quality, vegetation monitoring, erosion and sediment control, and other elements. Future State actions in the action area include continued management of State lands according to their current designations as Forest Reserves or Natural Areas Reserves. The State will continue to manage the threatened and endangered species on their lands to the best of their ability. No specific future State, local, or private actions are proposed that have not been discussed as part of their current management actions in the Environmental Baseline section above.

CONCLUSION

After reviewing the current status, the environmental baseline, the effects of the proposed action, and the cumulative effects, it is our biological opinion that implementation of the proposed action discussed herein is not likely to jeopardize the continued existence of any species covered in this biological opinion or adversely modify or destroy Oahu elepaio critical habitat. This conclusion is based on the following factors for the *Achatinella* tree snails and Oahu elepaio.

1. The Service's finding of no jeopardy in this biological opinion is based in large part on the conservation measures and stabilization plan that will be developed for *Achatinella* tree snails by experts in natural resource management. Ten wild populations each containing 300 snails, will be stabilized for each of the 11 species covered in this consultation. These units will be geographically distributed throughout the range of the species and must include as much of the genetic diversity of the species as remains in the wild.
2. Although some or all of the *Achatinella* tree snail species are likely to be adversely affected by actions discussed in this consultation, the potential for direct injury or harassment of these tree snail species has been minimized by incorporating a range of actions into the project design that will protect extant tree snail occurrences from Army training activities.

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3. Captive propagation is recognized as a critical element in the process of stabilizing *Achatinella* tree snails, and the establishment of field populations that can sustain these species in the wild is the long-term goal of the conservation measures described in this biological opinion and in the implementation process. *Achatinella mustelina* and *A. lila* have been successfully reared in captivity and translocated to new locations. In addition, captive propagation will protect representatives from all of the available species covered in this consultation.
4. The Service's finding of no jeopardy or adverse modification in this biological opinion for Oahu elepaio is based in large part on the conservation measures described in the proposed project. Measures that will offset adverse training impacts to Oahu elepaio include: a) control of rats in the equivalent of 75 elepaio territories at SBMR or at another site; b) moving targets within the impact area at SBMR so they are farther from the fire break road; and c) increasing the number of days per year available for resource management at SBMR to 45. Specific design of these conservation measures will be further developed by experts in natural resource management as part of the implementation of the conservation measures included in this biological opinion.
5. Although some Oahu elepaio will be taken and some critical habitat will be affected by actions discussed in this consultation, the potential effects on elepaio have been minimized by incorporating a range of actions into the project design that will protect elepaio from Army training activities. The elepaio population at SBMR can withstand the loss of the number of elepaio expected to be affected as avoidance and minimization measures offset adverse impacts from training.
6. Future actions required to prevent the long-term decline of the Oahu elepaio will be defined during the Oahu implementation process and will be based on the best available science with final approval by the Service.
7. Finalization and implementation of the WFMP will reduce the risk of fire escaping the impact areas at all Oahu training installations which will benefit both *Actatinella* tree snails, Oahu elepaio and elepaio critical habitat.

The Army training actions described in the Biological Assessment and in the biological opinion are not anticipated to compromise the conservation and recovery process described in the Oahu Tree Snail Recovery Plan (Service 1993). This recovery plan is based on 1) the presence of a functionally intact native forest with a close or closed canopy and an understory of native plants that can support tree snail populations; 2) a tree snail population structure that includes all age classes and supports reproductive rates that are high enough to sustain the population; 3) a landscape distribution of populations that preserves the remaining genetic diversity of each of the tree snail species within its natural range; and 4) ecological conditions that can support metapopulation dynamics where specific populations may decline or disappear over time while

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new populations within the landscape become established and grow; and 5) management of the threats that currently prevent the recovery of the species. Consequently, the Service has determined that the adverse effects to Oahu tree snails that will result from Army training activities will not contribute to an appreciable reduction in the likelihood of survival or recovery of *Achatinella* tree snail species in the wild by reducing the number of snails or their reproduction or distribution.

The Army training actions described in the Biological Assessment and in the biological opinion are not anticipated to compromise the conservation and recovery process described for the Oahu elepaio in the Draft Revised Hawaiian Forest Birds Recovery Plan (Service 2003). Recovery of the Oahu elepaio is based on: 1) protection of viable, self-sustaining populations in the six existing core areas (Waikane/Kahana, southern Koolau, central Koolau, southern Waianae, Schofield Barracks West Range, and Makaha/Waianae Kai), or of viable metapopulations on both the windward and leeward sides of the Koolau and Waianae Mountains; 2) protection and management of sufficient habitat consisting of functionally intact forest with a closed canopy and dense understory to support these populations; and 3) identification and management of the threats that were responsible for the decline of the species. Consequently, the Service has determined that the adverse effects to Oahu elepaio that will result from Army training activities will not contribute to an appreciable reduction in the likelihood of survival and recovery of Oahu elepaio.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined (50 CFR 17.3) by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Army so that they become binding conditions in order for the exemption in section 7(o)(2) to apply. The Army has a continuing duty to regulate the activity covered by this incidental take statement. If the Army (1) fails to assume and implement the terms and conditions or (2) fails to require any

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contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to any permit or contract, then the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Army must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law (HRS 195D).

Amount or Extent of Take

This biological opinion anticipates the following forms of incidental take:

1. The Service anticipates that take will occur in the form of harm (due to the loss of habitat), harassment, and death as a result of Army activities described in this biological opinion. The Service anticipates that the loss of no more than one occurrence of *Achatinella mustelina* comprised of 10-40 individuals will occur over the next 10 years. The Service does not anticipate any take for *A. apexfulva*, *A. bulimoides*, *A. byronii*, *A. curta*, *A. decipiens*, *A. leucorraphe*, *A. lila*, *A. livida*, *A. pulcherrima*, and *A. sowerbyana* because the Army will mark all known tree snail locations and avoid these occurrences. For tree snail species with no known field occurrences, if any are found, the Army will cease all actions that may adversely affect the tree snails. *Achatinella caesia*, *A. casta*, *A. decora*, *A. dimorpha*, *A. elegans*, *A. juncea*, *A. lehuiensis*, *A. papyracea*, *A. rosea*, *A. spaldingi*, *A. swiftii*, *A. thaanumi*, and *A. valida* are known to have occurred in the action areas but were last seen sometime prior to 1982, and so are not a part of this consultation. If any of these species are rediscovered, the Service should be notified immediately and all adverse actions that may affect these species should cease.
2. The Service anticipates that take will occur in the form of harm (due to the loss of habitat), harassment, and death as a result of Army activities described in the biological opinion. The Service anticipates the take of no more than two (2) Oahu elepaio pairs or active elepaio nests per year over the first five years after implementation of the proposed action. Based on the recent fire history of SBMR, the Service also anticipates that an area equivalent to two elepaio territories (3 ha; 7.4 ac) will be lost per year over the first five years. We anticipate that the effective implementation of the WFMP would result in a reduction in the level of take to no more than one elepaio pair or nest per year and/or the loss of an area equivalent to no more than one elepaio territory (1.5 ha; 3.7 ac) per year. The Service believes that this level of take will not jeopardize the Oahu elepaio or adversely modify its critical habitat.

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Effect of Take

In this biological opinion, the Service determined that this level and duration of anticipated take is not likely to result in jeopardy to the Oahu elepaio, *Achatinella* tree snail or destruction or adverse modification of Oahu elepaio critical habitat.

Reasonable and Prudent Measures

The reasonable and prudent measures given below, with their implementing terms and conditions, are designed to minimize the impacts of incidental take that might otherwise result from the proposed actions. If, during the course of the actions, the level of incidental take is exceeded, the action agency is required to reinitiate consultation and review the reasonable and prudent measures provided in this biological opinion. In addition, the Army must cease the activities that caused the taking; must immediately provide an explanation of the causes of the taking; and must review with the Service the need for possible modification of the reasonable and prudent measures. The Army will offset unavoidable impacts through the implementation of the conservation measures as described in the Project Description. The Army will implement the conservation measures as identified in the Project Description of this biological opinion.

The Service believes the following Reasonable and Prudent Measures are necessary and appropriate to minimize incidental take of *Achatinella* tree snails and Oahu elepaio. The measures described below are non-discretionary and must be implemented.

1. Minimize impacts of military activities and actions on survival and reproduction of *Achatinella mustelina* at SBMR.
2. Minimize direct impacts of military activities on survival and reproduction of Oahu elepaio within the action area at SBMR.
3. Minimize loss of Oahu elepaio habitat at SBMR, SBER, and KLOA.
4. Minimize threats of alien rats and feral ungulates to Oahu elepaio and Oahu elepaio habitat at SBMR, SBER, and KLOA.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the agency must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

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1. Minimize impacts of military activities and actions on survival and reproduction of *Achatinella mustelina* within the action areas for SBMR.
 - 1.1 Begin implementation of the stabilization plan within three years of the issuance of the biological opinion.
 - 1.2 All enclosures of known tree snail occurrences must be completed within five years of the issuance of the biological opinion.
 - 1.3 The Army will report in writing on a semi-annual (twice per year) basis to the Service on the following items: 1) status of the known occurrences; 2) number and location of high explosives or pyrotechnics that land outside of the impact area; 3) the extent of damage or fires that result from these high explosives or pyrotechnics; and 4) how close to known tree snail occurrences were the high explosive impacts.
 - 1.4 The Service shall be notified within three (3) working days of any take of *Achatinella mustelina*.
 - 1.5 The depository designated to receive specimens of *Achatinella mustelina* or shells that are collected is the B.P. Bishop Museum, 1525 Bernice Street, Honolulu, Hawaii, 96817 (telephone: 808/547-3511). If the B.P Bishop Museum does not wish to accession the specimens, the permittee should contact the Service's Division of Law Enforcement in Honolulu, Hawaii (telephone: 808/541-2681; fax: 808/541-3062) for instructions on disposition.
2. Minimize direct impacts of military activities on survival and reproduction of Oahu elepaio within the action area at SBMR.
 - 2.1. The Army will report to the Service in writing at least semiannually (twice per year) the number of high explosive rounds that land above the fire break road, the locations where such rounds land, and whether these locations are within any known elepaio territories.
 - 2.2. The Army will notify the Service within 24 hours of any fires that burn any portion of a known elepaio territory and the number of elepaio territories affected.
 - 2.3. The Army will limit training actions in the forest above the fire break road at SBMR in the elepaio nesting season (January to May) to small numbers of troops (platoon or less) that remain in one location for short periods of time (one hour or less), to limit possible nest disturbance.
 - 2.4. The depository designated to receive specimens of any Oahu elepaio that are killed is the B.P. Bishop Museum, 1525 Bernice Street, Honolulu, Hawaii, 96817 (telephone: 808/547-3511). If the B.P Bishop Museum does not wish to accession the specimens, the permittee should contact the Service's Division of Law Enforcement in Honolulu, Hawaii (telephone: 808/541-2681; fax: 808/541-3062) for instructions on disposition.

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3. Minimize loss of Oahu elepaio habitat at SBMR, SBER, and KLOA.
 - 3.1. The Army will report to the Service in writing on a semi-annual (twice per year) the number of fires above the fire break road, the area burned by each fire above the fire break road, including the amount of critical habitat burned, and how each fire was ignited or crossed the fire break road.
 - 3.2. The Army will notify the Service within 24 hours of any instance in which training was not conducted in accordance with the WFMP.
4. Manage threats to Oahu elepaio and Oahu elepaio habitat at SBMR, SBER, and KLOA.
 - 4.1. The Army will report to the Service in writing annually the number of elepaio territories in which rats were controlled, the location of each territory in which rats were controlled, the methods by which rats were controlled in each territory, the dates on which rat control activities were conducted in each territory, and the status of elepaio in each territory from the previous year.
 - 4.2. The Army, Service, and ornithological experts will formally reassess all impacts to Oahu elepaio and elepaio critical habitat that have occurred during the first five years following completion of this biological opinion. This formal review will occur before the end of calendar year 2008 and its purpose will be to reassess impacts from training exercises and, if necessary, correct any outstanding issues that are still impacting elepaio and resulting in the loss suitable elepaio habitat at SBMR. The feasibility of restoring critical habitat areas that have been lost also will be reassessed during this formal review.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The recommendations provided relate only to the proposed action and do not necessarily represent complete fulfillment of the Army's section 7(a)(1) responsibilities for the species.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

1. Future surveys for Oahu tree snails should be exclusively focused on locating new occurrences of snails rather than an add-on activity for other surveys. Combining tree snail

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surveys with other objectives does not allow for the time and intensity needed to adequately search and locate tree snails.

2. Whenever possible, field biologists familiar with tree snails and survey methodology should be included with Army Natural Resource staff during field surveys.
3. Establish two or more captive populations for each known tree snail species within the action areas with oversight from tree snail experts that have successfully carried out captive propagation.
4. When compatible with training objectives, reduce the maximum allowed propellant charge for 155 mm and 105 mm rounds from three powder bags to two, to reduce the chance of rounds landing above the fire break road.

REINITIATING-CLOSING STATEMENT

This concludes formal consultation on this action. If implementation of actions for stabilization have not been initiated by the end of calendar year, 2006, then the Army will be required to reinitiate formal consultation to allow for re-evaluation of project effects within the context of the environmental baseline for the plant and animal species covered in this biological opinion. As required in 50 CFR § 402.16, reinitiation of consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation of consultation.

The Army will coordinate with the Service if a fire due to military activities or actions occurs outside of any of the fire breaks or fuel breaks that have been established at any of the installations covered in this biological opinion. No military training activities with live-fire weaponry, except for those that are addressed in this consultation, may occur outside these fire breaks or fuel breaks. Similarly, the Army will reinitiate consultation if a fire due to military activities or actions affects any known occurrence of an federally listed species requiring stabilization prior to its being stabilized to ensure the species is not in jeopardy of extinction. As stated in the Conclusion of the Effects of the Action on Listed Species (above), the Service's finding of no jeopardy is based in large part on the conservation measures built into the project by the Army. Should there be a failure to carry out any or all of the described measures, or if the measures are not effective, or if these measures are modified in any way beyond that accepted through the Oahu Implementation Team review process, reinitiation of consultation will be required.

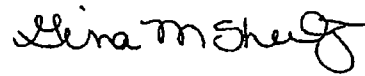
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If you have any questions regarding this biological opinion, please contact Ms. Patrice Ashfield of my staff at (808) 792-9400.

Sincerely,

A handwritten signature in black ink, appearing to read "Gina M. Shultz". The signature is fluid and cursive, with the first name "Gina" being more prominent.

Gina M. Shultz
Acting Field Supervisor

Attachments

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ability to provide specific training, such as virtual training with a fixed tactical internet (FTI) and antitank missile training. Furthermore shortcomings in capacity and capability of live-fire and simulation training facilities would make it impossible to train the Soldiers of the SBCT to the Army standard. Reduced training time would mean that fewer Soldiers were qualified on their individual weapons systems and that elements of the brigade would not be trained in their collective tasks. This alternative would not meet the purpose and need of transforming the USARHAW 2nd Brigade, 25th ID(L).

2.6.3 Transformation in Hawai'i with Maneuver Live-Fire and Nonlive-Fire Training on the Continental US Instead of on Hawai'i

Under this alternative, the Army would transform by conducting collective live-fire and maneuver training on a continental US installation. All proposed cantonment facilities required to support an SBCT would be built, but no new collective maneuver ranges (nonlive-fire and live-fire) would be constructed. The Army would not acquire the 23,000-acre (9,308 hectare) WPAA adjacent to PTA. In addition the following projects would not be built in Hawai'i under this alternative because they are tied to the relocated maneuver training:

- The battle area complexes at SBMR and PTA;
- The Combined Arms Collective Training Facility (CACTF) with SRTA live-fire training at KTA;
- The Urban Assault Course (UACTF) at SBMR; and
- The Anti-Armor Live-Fire and Tracking Range at PTA.

QTR1 and QTR2 would still be constructed, and the SRAA would still be needed to provide space for QTR2 and the SBCT motor pool. Both QTRs would be needed to provide day-to-day training of Soldiers on their individual weapons. The Virtual Flight Training Facility (VFTF) to be built at SBMR is a key element of the training requirements for an SBCT because their suite of simulators and specialized training equipment are an integral part of the transformation process.

The Army considered ranges west of the Mississippi River to minimize travel time. Based on these criteria, continental US Army installations considered as potential sites for 2nd Brigade live-fire and maneuver training include Fort Richardson and Fort Wainwright and the Donnelly Training Area in Alaska (considered as one installation for this analysis and collectively called US Army, Alaska (USARAK), Fort Lewis and Yakima Training Center in Washington State (considered a single installation and referred to as Fort Lewis), the National Training Center at Fort Irwin in California, Fort Carson and Piñon Canyon Training Area in Colorado (considered as one installation and referred to as Fort Carson), Fort Hood in Texas, Fort Riley in Kansas, and Fort Polk in Louisiana. These are the major Army installations in the western US devoted to training US Army forces command units. Table 2-11 provides an overview of the installations.

In Table 2-11, "total area" is the land area in acres occupied by each military reservation. Ranges, environmental constraints, cantonment areas, and other factors, such as regulatory

2. Description of the Proposed Action and Alternatives

requirements and access, reduce actual lands available for training at each installation. "Current mission" describes the major functions of each installation. As indicated in the last column of the table, USARAK, Fort Lewis, and Fort Polk are undergoing transformation to receive SBCTs; one will be stationed in USARAK, two at Fort Lewis, and one at Fort Polk. The specialized ranges, as well as the MSTF/ISE, VFTF, FTI, and Installation Information Infrastructure Architecture (I3A) projects required for SBCT training are already programmed to be built at these installations. The other installations may eventually receive similar facilities as transformation to the future force occurs over the next 30 years, but at present Forts Irwin, Riley, Hood, and Carson are not capable of providing the specialized training an SBCT requires, and there are no current plans to construct the required facilities at those installations.

Table 2-11 shows that, of the six installations considered, only USARAK, Fort Lewis, and Fort Polk will have the facilities required to train a Stryker brigade; therefore, the others are excluded from further consideration.

If the 2nd Brigade is to train at either of these installations, all the people, equipment, and vehicles associated with each element of the brigade would have to be transported to Alaska or Washington. This would be required to ensure that the Soldiers could train with their own equipment in accordance with Army doctrine. In addition equipment belonging to the Stryker brigades in Alaska and Washington cannot be assumed to be available for use by Hawai'i personnel. While it is possible to move equipment by barge from O'ahu to the island of Hawai'i, Alaska and Washington are too far away for this type of transport to be practical, and the equipment and personnel would need to be airlifted. Military Traffic Management Command's Traffic Engineering Agency estimated in December 2000 at least 79 C-5 aircraft and 110 C-17 aircraft would be required to move one Stryker brigade (USARHAW 2001a), effectively removing over 80 percent of the Air Force's transport capabilities during training of one SBCT. The Air Force will receive the last of its 120 C-17 aircraft in November 2004 (FAS 2002a) and has 109 C-5 aircraft, with no more in the pipeline (FAS 2002b). Only six C-17s are proposed to be stationed in Hawai'i and will replace four C-130s currently stationed there.

Even though the entire brigade may not need to be transported at one time, moving even one rifle battalion would tie up a substantial portion of the Air Force's airlift capability for an extended period of time. Air Force airlift support would be unavailable for other uses, including actual wartime deployments of the force. Aside from the substantial costs of such operations, it is impractical to expect the Air Force to commit so large a percentage of its resources to support a training exercise.

USARHAW staff estimates that preparation prior to and after each deployment would take five days total. Flight times are estimated at six hours each way. Assuming that maneuver training is to be conducted four times per year, approximately 40 training days of the available 270 would be lost during deployments to Alaska or Washington.

2. Description of the Proposed Action and Alternatives

Table 2-11
Continental US Army Installations Considered

Installation, State	Total Area (acres)	Current Mission	SBCT Required Facilities?
Fort Richardson	71,441 (28,923 hectares)	Home to 172 nd Infantry Brigade; programmed for one SBCT.	Will be constructed. ¹
Fort Wainwright	656,241 (265,684 hectares)		
Donnelly Training Area, Alaska	640,488 (259,290 hectares)		
Fort Lewis	86,174 (34,888 hectares)	Home to I Corps, 1st Brigade of the 25 th ID(L), and the 3rd Brigade of the 2nd Infantry Division. Programmed for two SBCTs.	Will be constructed. ¹
Yakima Training Center, Washington	316,786 (128,253 hectares)		
National Training Center at Fort Irwin, California	636,251 (257,591 hectares)	National Training Center—desert training of heavy Army forces.	No
Fort Carson	137,404 (55,629 hectares)	Home to 7th Infantry Division (mechanized).	No
Piñon Canyon Maneuver Site, Colorado	235,896 (95,504 hectares)		
Fort Hood, Texas	214,352 (86,782 hectares)	Home to III Corps, 1st Cavalry Division, 4th Infantry Division (mechanized).	No
Fort Riley, Kansas	100,656 (40,751 hectares)	Home to the 24th Infantry Division (mechanized).	No
Fort Polk, Louisiana	198,143 (80,220 hectares)	Home of the Joint Readiness Training Center and 2 nd Armored Cavalry Regiment.	Will be constructed. ¹

¹Facilities of the type used to train an SBCT will ultimately be built at all major Army training installations as part of Transformation to the future force, except the AALFTR, which is specifically designated for Hawai'i, but not in time for the 2nd Brigade to meet its 2007 IOC target date.

Source: Acreage from Table C-8, US Army 2002c

An analysis of USARAK and Fort Lewis training facilities and capacity was conducted as an appendix to the USARHAW RD Plan (Nakata Planning Group LLC. 2002a). It showed that Fort Lewis and USARAK would lack adequate collective live-fire training facilities to support an additional SBCT. Neither USARAK nor Fort Lewis is proposing to build an anti-armor live-fire and tracking range to provide the capacity for training that has been programmed for Hawai'i. The Army proposes to conduct anti-armor live-fire training at these facilities on ranges constructed for other uses. This requires careful scheduling to avoid conflicts, and adding an additional SBCT would reduce the throughput capacity to unacceptable levels. Because Fort Polk will already be training an SBCT unit, as well as

4.10. BIOLOGICAL RESOURCES

4.10.1 Impact Methodology

Potential direct and indirect impacts on biological resources were analyzed for local terrestrial and aquatic ecosystems, including general vegetation and wildlife resources, along with sensitive species, biologically sensitive areas, designated critical habitat, regulated habitats, and biological resource management plans and practices.

The methods for assessing potential direct and indirect impacts on biological resources generally include the following:

- Comparing the location of such resources in relation to the physical locations of the proposed actions to determine potential direct and indirect impacts on these resources; and
- Examining the types and intensity of activities proposed in each location to determine the potential for impacts on these resources.

For this analysis, specific potential impacts on biological resources are based on the following:

- Relative importance or value of the resource affected, for example its legal, commercial, recreational, ecological, or scientific value;
- The resource's relevant occurrence in the region;
- Sensitivity of the resource to the proposed action;
- Anticipated physical extent of the potential impact; and
- Anticipated duration of the ecological ramifications of the potential impact.

Each activity in the Proposed Action is assessed based on its location and associated activities in relation to the known presence and extent of biological resources on the installation. The sensitivity of biological resources is evaluated based on the following criteria, listed in order of importance:

- Designation of the resource by federal and state resource agencies (for example, US Army Corps of Engineers, NOAA Fisheries and the USFWS) as a high value or sensitive resource;
- Any known or presumed regional sensitivity of the resource; and
- Any known or presumed local significance of the resource.

Direct impacts may be short-term or long-term, depending on how the biological resources are altered or lost during the course of the project implementation and operation. Examples of direct impacts from project-related construction include grading or brushing vegetation (using a chain to tear out shrubs and brush to leave behind herbaceous plants), filling drainage areas, and losing or interrupting wildlife foraging or nesting areas. Direct impacts

for each proposed action under each alternative are defined by the expected grading limits for that action. This impact analysis assumes that all biological resources within the area of proposed grading would be lost.

Indirect impacts occur when project-related activities affect biological resources in a manner other than a direct loss of the resource. For example, indirect impacts from a construction project might last only during construction or for the long-term operation of the facility. Noise, lighting, erosion and siltation, substantial reduction in water quality, dust, and increased human activity within or directly adjacent to sensitive habitat areas are examples of potential indirect impacts. Indirect impacts resulting from the proximity of construction and operation along the roads generally are considered here to affect habitats and species within 167 feet (50 meters) of the development. This boundary was determined by looking at survey methods of biological resources along other trails and roads in Hawai'i. Additionally, the dust and noise generated by the limited activity that will occur on these roadways will also fall within this buffer, though may extend a greater distance in isolated instances.

In addition, results from the ATTACC model, which estimates the effects of maneuver training on the landscape, were considered when evaluating the potential impacts.

4.10.2 Factors Considered for Impact Analysis

Impacts on biological resources were evaluated by determining the sensitivity, significance, or rarity of each resource that would be adversely affected by the Proposed Action, as described in the previous section. The significance may be different for each habitat or species and is based on the resource's rarity or sensitivity and the level of impact that would result from the proposed project.

Most impacts on high sensitivity resources are considered significant, while the determination of significance for impacts on the moderate and low sensitivity resources depends more on site-specific factors, such as the habitat quality and population size, as well as the nature and extent of the anticipated impact. For example, impacts on moderate resources could be considered significant if the anticipated impact were to greatly reduce the population or geographic distribution of a species of special concern.

Factors considered in determining whether an alternative would have a significant impact on biological resources include the extent or degree to which its implementation would do any of the following:

- Cause the "take" of a highly sensitive resource, such as a threatened and endangered or special status species (USFWS, NOAA);
- Result in a jeopardy biological opinion by the USFWS or NOAA;
- Reduce the population of a sensitive species, as designated by federal and state agencies, or a species with regional and local significance. This can happen with a reduction in numbers, by alteration in behavior, reproduction, or survival, or by loss or disturbance of habitat;

- Have an adverse effect on a wetland or riparian habitat regulated by the local, state, or federal government or on another sensitive habitat (such as designated critical habitat) identified in local or regional plans, policies, or regulations or by the USFWS or NOAA;
- Interfere with the movement of any native resident or migratory wildlife species (including aquatic species) or with established native resident or migratory wildlife corridors;
- Alter or destroy high to moderate habitat that would prevent biological communities in the area prior to the project from reestablishing;
- Conflict with Hawai'i Coastal Zone Management Program policies;
- Introduce or increase the prevalence of undesirable nonnative species; or
- Cause long-term loss or impairment of a substantial portion of local habitat (species-dependent).

In addition to these factors, public concerns expressed during the scoping process were also considered in the impact analysis. These concerns included impacts on native species, particularly federally listed ones, and the loss or disturbance of natural habitat. Marine mammals and the Humpback Whale Sanctuary were also mentioned as specific issues of concern.

4.10.3 Summary of Impacts

In response to the agency and public comments received during the Draft EIS comment period we reevaluated our analysis of the biological resources. As a result of considering these comments and a reanalysis of the available information, we recognize that the impacts to biological resources from fire could not be mitigated to the less than significant level. However, these impacts will be substantially reduced as a result of mitigation.

Table 4-10 lists the types of biological impacts associated with the evaluated alternatives at the relevant installations. General descriptions of the impacts are also provided.

Proposed Action (Preferred Alternative)

The Proposed Action would affect biological resources identified within the SBCT ROI. These resources include general plants, animals, and vegetation communities, as well as sensitive species and habitats. Sensitive habitats refer to BSAs, as identified in the O'ahu and PTA INRMPs (USARHAW and 25th ID[L] 2001a, 2001b), wetlands, and federally designated critical habitat. Impacts to these resources are summarized below and are discussed in detail for SBMR, DMR, KTA, and PTA in the appropriate chapters.

Significant Impacts

Impact 1: Impact from fire on sensitive species and sensitive habitats. Fire would have a significant impact on SBMR, KTA, and PTA. At DMR and KLOA impacts would be significant but mitigable to less than significant. Impacts are not mitigable to the less than significant level when considered project-wide. The proposed live-fire training would increase the probability

Table 4-10
Summary of Potential Biological Resources Impacts

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Impacts from fire on sensitive species and sensitive habitat.	⊗	⊗	⊗	⊖	⊖	⊖	⊗/⊖	⊗/⊖	⊗/⊖	⊗	⊗	⊗	⊗	⊗	⊗
Impacts from construction and training activities on sensitive species and sensitive habitat.	⊖	⊖	⊖	⊖	⊖	⊖	⊖/⊖	⊖/⊖	⊖/⊖	⊗	⊗	⊖	⊗	⊗	⊖
Impacts from the spread of nonnative species on sensitive species and sensitive habitat.	⊖	⊖	⊖	⊖	⊖	⊖	⊖/⊖	⊖/⊖	⊖/⊖	⊖	⊖	⊖	⊖	⊖	⊖
Impacts from construction and training activities on general habitat and wildlife.	⊙	⊙	⊙	⊙	⊙	⊙	⊙/⊙	⊙/⊙	⊙/⊙	⊙	⊙	○	⊙	⊙	⊙
Threat to migratory birds.	⊙	⊙	⊙	⊙	⊙	⊙	⊙/⊙	⊙/⊙	⊙/⊙	⊙	⊙	⊙	⊙	⊙	⊙
Noise and visual impacts.	⊙	⊙	⊙	⊙	⊙	⊙	⊙/⊙	⊙/⊙	⊙/⊙	⊙	⊙	⊙	⊙	⊙	⊙
Vessel impacts on marine wildlife and habitat.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	⊙	⊙	⊙	⊙	⊙	⊙
Runoff impacts on marine wildlife and coral ecosystems.	N/A	N/A	N/A	○	○	○	○/N/A	○/N/A	N/A	⊙	⊙	○	⊙	⊙	○

This table summarizes project-wide impacts. For installation-specific impacts see Chapters 5 – 8.

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

LEGEND:

- | | |
|--|--------------------------------|
| ⊗ = Significant | N/A = Not applicable |
| ⊖ = Significant but mitigable to less than significant | PA = Proposed Action |
| ⊙ = Less than significant | RLA = Reduced Land Acquisition |
| ○ = No impact | NA = No Action |
| + = Beneficial impact | |

that there would be a wildland fire in the project ROI (Section 4.12.3, Impact 7). Full implementation of the terms and conditions of the Biological Opinions for SBCT and current force activities on the islands of O'ahu and Hawai'i (dated October 2003 and December 2003, respectively) and full implementation of the Wildland Fire Management Plan (dated October 2003) will substantially reduce the impacts, but not to the less than significant level. The Army has three years to develop and execute the O'ahu Implementation Plan as directed by USFWS in the Biological Opinion. The Army has two years to execute the terms and conditions defined in the Biological Opinion for the Pohakuloa Training Area. Since there is a risk that a wildfire could result in an irretrievable loss of individuals of sensitive species, the Army has made a conservative determination that although the mitigation will considerably reduce the impacts to biological resources, the impacts may not be reduced to a less than significant level. The mitigation measures below will substantially reduce the impact but not to less than significant.

Regulatory and Administrative Mitigation 1. The effects of the proposed action on listed species in the ROI have been evaluated in the ESA Section 7 Consultation with USFWS. The Army will implement all the terms and conditions defined in the Biological Opinions issued by USFWS for current force and SBCT proposed actions on the islands of O'ahu and Hawai'i. The terms and conditions that implement the reasonable and prudent measures determined during this consultation will be incorporated into the Proposed Action. These measures will help avoid effects and compensate for impacts on listed species that would result directly and indirectly from implementation of the Proposed Action. The Biological Opinions are available upon request.

The IWFMP for Pōhakuloa and O'ahu Training Areas was updated in October 2003. The Army will fully implement this plan for all existing and new training areas to reduce the impacts associated with wildland fires. The plan is available upon request.

Additional Mitigation 1. No additional mitigation measures were identified for this impact.

Impact 2: Impacts from construction and training activities on sensitive species and sensitive habitat. The construction and training impacts on sensitive biological resources associated with the Proposed Action at PTA are significant and not mitigable to the less than significant level. These activities may have a significant and mitigable impact on sensitive species and habitat (including critical habitat) on SBMR, DMR, and KTA/KLOA. Federally listed species and critical habitat, observed in or with the potential to occur within the SBMR, DMR, KTA/KLOA and PTA ROI are listed in Appendix I-3. SBCT activities in this ROI include the use of tactical vehicles for off-road maneuvers, increased dismounted maneuvers, and increased amount of ammunition used (including live fire at SBMR, KTA [SRTA only] and PTA). The direct and indirect effects would be habitat disturbance, deterrence of wildlife use, spread of nonnative species, increase in the probability of fire and direct take of listed wildlife, and destruction of listed plants. At PTA, individuals of sensitive plant species would be eliminated by tactical vehicle maneuvers, construction, and dismounted training and there is the potential for currently unsurveyed lava tubes with sensitive arthropod species to be crushed during training maneuvers. These installation-specific impacts would be mitigated to the less than significant level by the regulatory and administrative measures described below.

The project-wide impact from construction and training on sensitive species and sensitive habitat, including their federally designated critical habitat, would be significant but not mitigable to the less than significant level. The combined impacts of fire at PTA, SBMR, KTA, and DMR and mounted maneuver at PTA could cause long-term loss or impairment of a substantial portion of natural habitat and the loss of individuals. Though the following mitigation measures would decrease the likelihood of this happening, there is a risk that a wildfire could result in an irretrievable loss of individuals of sensitive species. The overall impact of project actions on sensitive (listed) species and their sensitive habitat (including federally designated critical habitat) is still considered significant, according to factors detailed in Section 4.10.2., but not mitigable to less than significant. The mitigation measures below will substantially reduce the impact, but not to less than significant.

Regulatory and Administrative Mitigation 2. The Army will implement all the terms and conditions defined in the Biological Opinions issued by USFWS for current force and SBCT proposed actions on O'ahu and the island of Hawai'i. The terms and conditions that implement the reasonable and prudent measures determined during this consultation will be incorporated into the Proposed Action. These measures will help avoid effects and compensate for impacts on listed species that would result directly and indirectly from implementing the Proposed Action. The Biological Opinions are available upon request. The Army will implement land management practices and procedures described in the ITAM annual work plan to reduce erosion impacts (US Army Hawai'i 2001a). Currently these measures include implementing a training requirement integration (TRI) program; implementing an Integrated Training Area Management (ITAM) program; a Sustainable Range Awareness (SRA) program; developing and enforcing range regulations; implementing an Erosion and Sediment Control Management Plan; coordinating with other participants in the Ko'olau Mountains Watershed Partnership (KMWP); and continuing to implement land rehabilitation projects, as needed, within the Land Rehabilitation and Maintenance (LRAM) program. Examples of current LRAM activities at KTA include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; a combat trail maintenance program (CTP); coordination through the Troop Construction Coordination Committee (TCCC) on road maintenance projects; and development of mapping and GIS tools for identifying and tracking progress of mitigation measures.

Additional Mitigation 2: The Army proposes to fence or flag where practicable any sensitive plant communities from activities that may take place in the ROI. The Biological Opinions outline fencing for the majority of the sensitive species. USARHAW will evaluate if additional fencing may be necessary.

Significant Impacts Mitigable to Less Than Significant

Impact 3: Impact from the spread of nonnative species on sensitive species and sensitive habitat. In general, nonnative plant and animal species pose a threat to Hawaiian native ecosystems (Atlas 1998). The Proposed Action in the SBMR, DMR, KTA/KLOA, and PTA ROIs would increase the potential for the introduction and spread of alien species through troops and equipment movement, construction, and fires. Nonnative species alter habitat, prey on native species, compete for resources, and carry diseases, all of which decrease the success of native species.

Regulatory and Administrative Mitigation 3. As required in the terms and conditions of the Biological Opinions, the Army will implement the following:

- Educate soldiers and others potentially using the facilities and roads in the importance of cleaning vehicles, equipment, and field gear;
- Educate contractors and their employees about the need to wear weed-free clothes and to maintain weed-free vehicles when coming onto the construction site and to avoid introducing nonnative species to the project site;
- Prepare a one-page insert to construction contract bids informing potential bidders of the requirement; and

- Inspect and wash all military vehicles at wash rack facilities before they leave SBMR, KTA, or PTA to minimize the spread of weeds, such as fountain grass and animal (invertebrate) relocations.

USARHAW will follow HQDA guidance developed in consultation with the Invasive Species Council and compliance with Executive Order 13112, which determines federal agency duties for preventing and compensating for invasive species impacts. USARHAW will agree to all feasible and prudent measures recommended by the Invasive Species Council that would be taken in conjunction with SBCT action to minimize the risk of harm. Implementing an Environmental Management System will further improve the identification and reduction of environmental risks inherent in mission activities.

In accordance with USDA regulations and requirements, the USDA will inspect and certify cargo originating outside of Hawai'i to ensure it is not carrying the brown tree snake or other reptiles before cargo is transported for use on training ranges.

Additional Mitigation 3: The Army proposes to use native plants in any new landscaping or planting efforts where practicable. When practicable, natural habitats would remain intact or adjacent areas would be restored as habitat.

Less than Significant Impacts

Impacts from construction and training on general habitat and wildlife. The project-wide impact as a result of training on general vegetation, wildlife, and habitat would be less than significant. At all project installations, there are impacts on general vegetation and wildlife from vehicle maneuvers. Impacts are limited to some extent by terrain. Additionally, the Army's ITAM program is used to limit the potential impact on land from training by rotating land used for maneuvers and monitoring factors like vegetation cover and soil moisture. The Army will also develop the DuSMMoP, which should reduce the potential for soil erosion harmful to general habitat and wildlife.

The Army proposes to conduct more intensive surveys of lava tubes, which are identified as potentially supporting native root-dependent arthropods. Lava tubes found to contain or support these arthropods will be avoided where practicable. All generated construction- and training-related drainage will be channeled away from lava tubes where practicable.

Threat to migratory birds. The construction and subsequent presence of FTI antennas would not significantly affect migratory bird species known to occur in the SBMR ROI, even those that migrate at night (USFWS 2000). (Specific location, height, and structural features are described in Appendix D.) In general these monopole antennas will be no higher than 100 feet (33 meters) and will be mounted on existing structures. The Army would apply the SOPs and BMPs identified for federal agencies in Executive Order 13186 to minimize the overall impact of SBCT actions on migratory birds. These are identified in Section 5.10.2 and in more detail in Appendix I-2.

Noise and visual impacts. The Proposed Action would have short- and long-term noise impacts on biological resources within the SBMR, DMR, KTA/KLOA, and PTA ROIs. These

impacts would have negative effects but would be less than significant. These impacts would arise from the increase in soldiers, off-road mounted maneuver, and vessel and helicopter use. They could affect marine mammals, which are sensitive to the presence of and noise produced by vessels and low-flying aircrafts. Terrestrial wildlife would be affected by off-road mounted and dismounted maneuver, the increase in ammunition use and low-flying helicopters. The Army's SOPs restrict the proximity of aircraft to the water surface and would prevent a significant impact occurring as a result of intentional aircraft operation. The remaining sources would not affect species and habitats in any manner identified within the significance factors and methodology described in 4.10.1 and 4.10.2, such as causing a population level decrease or 'take' of a federally listed species.

Vessel impacts on marine wildlife and habitat. Less than significant impacts on marine wildlife are expected from vessel transport between O'ahu and the island of Hawai'i. The increase from 60 to 66 LSV trips a year is minor and not significant. Assuming that low frequency or mid-range sonars are not used from LSVs, impacts from vessel transit is expected to be minor and not significant. (Low frequency and/or mid-range sonars have been shown to cause injury and mortality in marine wildlife (Rossiter 2003), but these emissions typically occur off of vessels engaged in defense training maneuvers, not transport). Existing MMPA regulations prohibit any boats in Hawaiian waters to approach within 100 yards (91 meters) of adult whales and within 300 yards (274 meters) of mother/calf pairs (NOAA 1997). LSVs and barges transit through Penguin Banks, a known high-concentration area for humpback whales. However since they travel at a maximum of 10 knots, collisions are unlikely. Impacts on marine wildlife from vessel transport in the ROI waters and/or in the Sanctuary under the Proposed Action are not considered to be significant. TSVs are not in use at this time. They may be utilized in the future. When and if that occurs, separate NEPA documentation will be done to address impacts from TSV use to marine wildlife.

Runoff impacts on marine wildlife and coral ecosystems. There would be less than significant impacts on marine wildlife and coral ecosystems in the PTA ROI. No impacts from potential runoff are expected for marine wildlife resources or coral ecosystems at the other sites. The expected increase in erosion to the ocean at PTA would be within the natural range that exists due to rainfall and runoff variation. There are no contaminants moving off the range, which is quite a distance from the coastline. No contamination of surface water or groundwater is expected (see Section 8-08 Water Resources). There is no runoff carrying contaminants from UXOs to nearshore ocean waters. There are no UXOs in the marine ROI. No water-contaminating activities are occurring in the upland portions of the marine ROI habitat, so no direct effects from runoff on marine wildlife or coral reefs and their associated organisms would occur. Impacts on marine wildlife and coral ecosystems in the ROI waters are not considered to be significant.

Reduced Land Acquisition Alternative

All of the impacts described for the Proposed Action would occur under Reduced Land Acquisition. However, because there is a reduction in size of the SRAA (by 1,300 acres [526 hectares]) impacts at that location from construction and training activities described above would be slightly less than those under the Proposed Action. There is no change in the significance level since the SRAA is an already disturbed area and the training proposed at

SRAA would occur just at PTA. Impacts on biological resources in the SBMR ROI would be further decreased under this alternative due to the removal of QTR2 from proposed actions in this area. There would be less of a loss and degradation of general and sensitive habitat in the SBMR ROI but this impact would still be considered less than significant. Impacts in the PTA ROI would increase slightly due to the placement of QTR2 in the ROI and the subsequent increase in mounted maneuver within the PTA ROI. However, this impact would still be significant and not mitigable.

No Action Alternative

The current baseline of existing conditions would continue under No Action.

There would be a continuation of existing significant and not mitigable to less than significant impacts. This includes fire impacts on sensitive species and habitat. Because there is a risk that a wildfire could result in an irretrievable loss of individuals of sensitive species, the Army has made a conservative determination that even under the No Action Alternative species and habitat could be affected by fire under the current force activities. Significant measures have been developed to prevent and control wildfires, and they will be implemented through the IWFMP.

Impacts from construction and training activities and the spread of nonnative species would be significant and mitigable to less than significant for all project areas.

Ongoing Army environmental management and stewardship activities, described in Chapter 2, would continue to decrease impact intensity and to protect sensitive plants and habitats within the ROI. All determinations made through ESA Section 7 Consultation, as described above and detailed in the project location chapters, would apply under this alternative as well.

The following less than significant impacts on biological resources would occur as a result of continued training under the No Action Alternative:

- Threats to migratory birds and noise and visual impacts;
- Impacts from construction and training on general habitat and wildlife;
- Vessel impacts on marine wildlife and habitat; and
- Runoff on marine wildlife and coral ecosystems.

These impacts would be limited and would be addressed by ongoing Army environmental management and stewardship activities.

4.11 CULTURAL RESOURCES

4.11.1 Impact Methodology

The methods for assessing potential impacts on cultural resources include identifying significant cultural resources in the areas of potential effect (APEs) under the Proposed Action to determine potential direct and indirect impacts on these resources.

To identify cultural resources in the project areas, historic and current maps and aerial photographs, cultural resources reports, and archival records were reviewed. In addition, federal, state, and local inventories of historic places, including the NRHP, were reviewed for information related to prehistoric and historic resources within the project areas. Project areas were surveyed to confirm presence or absence of previously recorded archaeological resources as well as to identify previously unrecorded cultural resources. Native Hawaiian groups were consulted in an attempt to identify and locate ATIs in the project areas.

4.11.2 Factors Considered for Impact Analysis

Factors determining significance of impacts on cultural resources are derived from federal laws and regulations regarding cultural resources protection.

Section 106 of the NHPA requires federal agencies to consider the effects of their actions on properties listed on or eligible for listing on the NRHP. Eligible properties would include properties significant for their importance to Native Hawaiian groups. Section 106 and its implementing regulations state that an undertaking has an effect on a historic property (i.e., NRHP-eligible resource) when that undertaking may alter those characteristics of the property that qualify it for inclusion on the NRHP. An undertaking is considered to have an adverse effect on a historic property when it diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects include, but are not limited to, the following:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property or alteration of the character of the property's setting when that character contributes to the property's qualifications for the NRHP;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property, or changes that may alter its setting;
- Neglect of a property, resulting in its deterioration or destruction; and
- Transfer, lease, or sale of a property without adequate provisions to protect its historic integrity.

Native Hawaiian sites, including sacred sites, burials, and cultural items, whether or not they are considered eligible for the NRHP, may also be protected under AIRFA, ARPA, or NAGPRA. Factors considered in determining whether an alternative would have a significant impact on cultural resources include the extent or degree to which its implementation would result in:

- An adverse effect on a historic property or TCP as defined under Section 106 of the NHPA; or
- A violation of the provisions of AIRFA, ARPA or NAGPRA.

It should be noted that an adverse effect on an historic property as defined by NHPA is not necessarily a significant impact under NEPA. While mitigation under NHPA does not necessarily negate the adverse nature of an effect, mitigation under NEPA can reduce the significance of an impact. NHPA and NEPA compliance are separate and parallel processes, and the standards and thresholds of the two acts are not precisely the same.

It should also be noted that some mitigation measures for other resource areas, such as cultivating land to revegetate a plant species, might involve actions that could create adverse effects on cultural resources. Prior to implementation, these actions would also undergo Section 106 review following federal guidelines.

In addition to these factors, public concerns expressed during the scoping process were also considered in the impact analysis. These concerns included access to traditional and religious sites for ceremonial purposes, access for hunting and gathering, protection and preservation of archaeological and traditional sites, interpretation of significance based on Native Hawaiian tradition and the knowledge of elders of the community, community involvement in managing cultural resources on Army land, and compliance with federal and state laws and regulations concerning cultural resources protection.

4.11.3 Summary of Impacts

Table 4-11 lists potential cultural resource impacts associated with the Proposed Action, Reduced Land Acquisition, and No Action at the relevant installations, based on identified cultural resources. General descriptions of identified impacts are provided.

Specifically for SBCT, the Army has complied with its responsibilities under the NHPA by executing a PA with the SHPO and the ACHP and through consultation with the OHA, the NPS, the ROOK, the OCHCC, Hui Malama I Na Kupuna 'O Hawai'i Nei, the OIBC, the HIBC, the HHF, and Native Hawaiian organizations, families, and individuals that attach traditional religious and cultural importance to cultural sites within the various project areas. The January 2004 PA for the SBCT project does not override any rights Native Hawaiians and Native Hawaiian organizations have under federal law, as described in 36 CFR 800.2(c)(ii)(B). Appendix J contains a copy of the PA.

Proposed Action (Preferred Alternative)

Significant Impacts

There would significant impacts on cultural resources and ATIs under the Proposed Action. Mitigation measures have been developed to lessen impacts to these resources.

Table 4-11
Summary of Potential Cultural Resource Impacts

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Impacts on historic buildings	⊗	⊗	○	○	○	○	⊗/○	⊗/○	○/○	⊗	⊗	○	⊗	⊗	○
Impacts on archaeological resources from range and facility construction	⊗	⊗	○	○	○	○	⊗/○	⊗/○	○/○	⊗	⊗	○	⊗	⊗	○
Impacts on archaeological resources from training activities	⊗	⊗	⊗	⊗	⊗	⊗	⊗/○	⊗/○	⊗/○	⊗	⊗	○	⊗	⊗	⊗
Impacts on archaeological sites from construction of FTI	⊗	⊗	○	⊗	⊗	○	○/○	○/○	○/○	⊗	⊗	○	⊗	⊗	○
Impacts on ATIs	⊗	⊗	○	⊗	⊗	○	⊗/○	⊗/○	○/○	⊗	⊗	○	⊗	⊗	○
Impacts from installation information infrastructure architecture construction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	⊗	⊗	○	⊗	⊗	○
Impacts on archaeological sites from road or trail construction	⊗	⊗	○	⊗	⊗	○	N/A	N/A	N/A	⊗	⊗	○	⊗	⊗	○
Impacts on archaeological sites from road use	○	○	N/A	⊗	⊗	○	⊗/○	⊗/○	⊗/○	⊗	⊗	○	⊗	⊗	○

This table summarizes project-wide impacts. For installation-specific impacts see Chapters 5 – 8.

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

LEGEND:

- | | |
|--|--------------------------------|
| ⊗ = Significant | N/A = Not applicable |
| ⊗ = Significant but mitigable to less than significant | PA = Proposed Action |
| ⊗ = Less than significant | RLA = Reduced Land Acquisition |
| ○ = No impact | NA = No Action |
| + = Beneficial impact | |

Significant Impacts

Impact 1: Impacts on historic buildings. Potential significant impacts on historic buildings would occur at KTA and PTA. Constructing the CACTF could have significant impacts on historic buildings at KTA. Among the properties to that may be adversely affected by the Proposed Action are the Nike Missile Site and other buildings that may be eligible for listing on the NRHP as Cold War-era properties. Construction of the Range Maintenance Facility at PTA would require demolishing Cold War-era buildings; the BAAF runway scheduled for upgrade may be a Cold War-era historic property as well. The Ke'amuku Village Complex within the WPAA may be eligible for listing on the NRHP. The construction of the Range Control Facility at SBMR would require demolishing buildings that are or will soon be 50 years of age and therefore may be eligible for the NRHP. The mitigation measures given below will mitigate the severity of the demolition of historic buildings at PTA but not to less than significant levels.

Regulatory and Administrative Mitigation 1. The Army will consult with the SHPO, ACHP, and interested parties, in accordance with Section 106 of the NHPA, on the Nike Missile Site

complex. The Army will manage and will renovate this complex in compliance with the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings.

The Army will require WPAA buildings to be avoided by using range management protocols, which will require the area around the buildings to be off-limits to military training activities. Ke'amuku Village will be marked as off-limits for training to protect it from damage.

Impact 2: Impacts on archaeological resources from range and facility construction. The greatest number and intensity of impacts from the Proposed Action would occur at SBMR and PTA. These two areas have the most proposed transformation related ground-disturbing activities and may have the most impacts on archaeological resources.

Facility construction involves ground softening at the PTA BAX, and grubbing vegetation, grading site surfaces, excavating the subsurface, and moving heavy construction equipment at all construction sites. All of these activities may result in direct destruction of or damage to archaeological resources. The mitigation measures given below would mitigate the severity of the impacts but not to less than significant levels.

Regulatory and Administrative Mitigation 2. Before construction, the Army will complete the evaluation of any archaeological sites within areas subject to range and facility construction. Sites determined to be eligible for the NRHP will be flagged for avoidance. The projects will be designed to avoid all eligible and unevaluated archaeological sites, to the full extent practicable. Geographical information system (GIS) and global positioning system (GPS) information will be given to project designers and range control to ensure that any sites are considered in project design. If it is not possible to avoid archaeological sites, the Army will consult in accordance with the PA to determine the appropriate mitigation for the damage to the sites, such as data recovery or other mitigation measures. To address the accidental discovery of archaeological sites, human remains, or cultural items, the Army has developed an inadvertent discovery plan (IDP) as part of the PA.

Impact 3: Impacts on archaeological resources from training activities. Significant impacts on archaeological sites would occur on DMR and PTA. Significant but mitigable to less than significant impacts would occur on SBMR and KTA. Potential impacts from the proposed training activities include damage to sites from subsurface excavations related to troop training (e.g., field fortifications, emplacement of obstacles), increased access by ground troops into the ranges, off-road vehicular movement, possible damage from live fire where resources are in the line of fire, and cleanup of unexploded ordnance within or adjacent to historic properties. Off-road mounted maneuvers with tactical vehicles could result in greater impacts on archaeological sites in all of the training areas. Activities such as revegetation could also cause impacts through ground disturbance. The presence of large numbers of personnel could affect resources through vandalism or accidental damage. Mitigation measures described below will reduce the severity of the impacts on these resources but not to less than significant levels.

Regulatory and Administrative Mitigation 3. The Army will evaluate archaeological sites within training areas related to SBCT. Sites determined to be eligible for the NRHP and sites pending evaluation will be identified and avoided through protective measures, to the full extent practicable. If it is not feasible to avoid identified archaeological sites or newly discovered sites, the Army will consult in accordance with the PA to determine the appropriate mitigation for the damage to the sites, such as data recovery or other mitigation measures. To address the accidental discovery of archaeological sites, human remains, or cultural items, the Army has developed an IDP as part of the PA.

Impact 4: Impacts on Areas of Traditional Importance. Potentially significant impacts on ATIs may occur at SBMR, DMR, and PTA.

Potential impacts related to construction of training facilities could include destroying or damaging ATIs, including shrines, archaeological sites, burials, or elements of Native Hawaiian cultural landscapes. Purchasing the SRAA at SBMR and the WPAA at PTA, and then using them for military training, could limit Native Hawaiian access to and use of sites on these parcels for traditional or religious purposes. Native Hawaiians consider range and training activities inappropriate and disrespectful uses of the land that disturb and change the character and feeling of spiritual places.

Construction of FTI antennas at SBMR, including on Mount Ka'ala, and at PTA may result in visual intrusion on cultural landscapes. Because some sites would require construction, they could have an adverse effect on the nature of the cultural landscape.

Activities relating to the construction of Dillingham Trail from DMR to SBMR could also result in significant impacts on such cultural properties; however, identified mitigations, including identification and avoidance, may reduce the severity of the impacts, but not to less than significant levels.

Regulatory and Administrative Mitigation 4. Facility construction or training area uses will be designed to avoid identified traditional places and limit visual impacts on TCPs by site location, design, and orientation, where feasible.

If avoiding identified TCPs or ATIs is not feasible because of interference with the military mission or risk to public safety, the Army will consult with the SHPO and Native Hawaiians, in accordance with the PA, to identify impacts and develop appropriate mitigation measures. Mitigation for impacts on the cultural landscape could include consulting with Native Hawaiians and using a cultural monitor during construction.

The Army will continue to provide Native Hawaiians with access to traditional religious and cultural properties, in accordance with AIRFA and Executive Order 13007, on a case-by-case basis. This access program will be expanded to include new land acquisitions.

The Army previously identified Native Hawaiian burial sites in the SBCT ROI. The Army completed notification and consultation procedures for these burial sites, in accordance with NAGPRA, and left these human remains in place. To address any impacts on any burial sites

or an inadvertent discovery of Native Hawaiian human remains or funerary objects, the Army will abide by all notification and consultation requirements outlined in Section 3 of NAGPRA.

Impact 5: Impacts on archaeological sites from road or trail construction. Construction of PTA Trail and the proposed trails through WPAA would result in a potentially significant impact on archaeological resources. Trail construction would involve vegetation removal and grading soil, as well as the regular use of heavy equipment. Some trail or road construction at WPAA is projected to go through areas with a high potential for archaeological resources. Cultural resources in the trail corridor and in construction staging areas may be adversely affected during construction of the trail. The PTA Trail route, as established, avoids all archaeological and historic sites in the Kawaihae area, but any alteration in the alignment could result in impacts on historic properties. Activities at WPAA could result in direct destruction or direct or indirect damage to archaeological resources by contributing to soil erosion. Additionally, construction activities could expose or disturb previously undiscovered cultural resources.

Construction of Dillingham Trail would involve vegetation removal and soil grading, as well as the regular use of heavy equipment. Cultural resources in the trail corridor and in construction staging areas could be adversely affected during construction. GIS and GPS information is available for all sites in the Dillingham Trail construction corridor. The project designers will use this information to avoid these sites and thereby mitigate impacts to less than significant levels.

Regulatory and Administrative Mitigation 5. In accordance with the PA, the Army will identify cultural properties, evaluate cultural properties for NRHP eligibility, and implement avoidance strategies to the full extent practicable. GIS and GPS information will be provided to project designers to ensure that sites are considered in the design and construction of all the proposed military vehicle trails and training roads on WPAA. If it is not possible to avoid archaeological sites, the Army will consult, in accordance with the PA, to determine the appropriate mitigation for the damage to the sites, such as data recovery or other mitigation measures. To address the accidental discovery of archaeological sites, human remains, or cultural items, the Army has developed an IDP as part of the PA.

Significant Impacts Mitigable to Less than Significant

Impact 6: Impacts on archaeological resources from road use. Impacts on sites along PTA Trail from military use of the trail could include erosion and possible vandalism or human access. These impacts are likely to be less than significant and will be mitigated by installation cultural resources personnel regularly monitoring them. Road use within WPAA poses a greater risk to resources recorded within the proposed new training area. The large number of gravel roads proposed would create additional impacts on sites within the WPAA, including erosion and possible vandalism or human access. The mitigation measures given below will mitigate the severity of the impacts to less than significant levels.

Regulatory and Administrative Mitigation 6. Eligible and unevaluated sites will be flagged and mapped on a range control GPS map. Installation cultural resources staff will monitor the sites regularly. Participants in training activities on the ranges will be ordered to avoid

identified sites. To address the accidental discovery of archaeological sites, human remains, or cultural items, the Army has developed an IDP as part of the PA.

Less than Significant Impacts

Impacts on archaeological sites from FTI construction. FTI antenna construction would have less than significant impacts at SBMR, DMR, and PTA, and no impact at KTA. FTI antennas would be constructed at SBMR and outlying areas. The FTI project at DMR would construct antennas within the installation boundary and on Dillingham Ridge to the southwest of the installation. FTI antennas would be erected at PTA, the WPAA, and several sites off PTA. Antenna support structure locations were chosen to avoid archaeological resources. The FTI project at KTA would construct antennas on disturbed sites and thus is considered to have no impact on archaeological resources.

Reduced Land Acquisition Alternative

Impacts under the RLA Alternative would be approximately the same as under the Proposed Action, but with less intensity of impacts at SBMR. The smaller acreage to be acquired and used for training in the SRRA means that fewer archaeological sites would be affected by Army activities in that area, and there would be less risk of inadvertent discovery of archaeological resources. Impacts at PTA would remain roughly the same as under the Proposed Action, because QTR2 at PTA would be located on land that was previously used for an impact area, and therefore there are few undisturbed archaeological resources remaining.

No Action Alternative

Existing conditions would continue under No Action. Less than significant impacts under No Action generally result from ongoing training activities or infrastructure projects. Ongoing training activities include continued off-road vehicle use. This would result in ongoing impacts on cultural resources in the training areas caused by ground troop activities, off-road vehicle movement, and subsurface excavations. Archaeological resources on the training areas are monitored following exercises to document adverse effects on the sites. Under No Action, current force training would continue, and there would be no additional impacts on cultural resources. USARHAW will continue to inventory eligible historic properties, in compliance with Section 110 of the NHPA, and project planning will comply with Section 106 and its implementing regulations. Impacts on cultural resources would be mitigated in compliance with these regulatory requirements.

5.10 BIOLOGICAL RESOURCES

5.10.1 Affected Environment

This section is divided into discussions of general vegetation, wildlife, and habitat types common to SBMR, SRAA, and WAAF, including sensitive species and habitats known to occur or with the potential to occur in this area. Also included are federal, state, and locally regulated species, such as threatened and endangered species or species of concern.

Included in this ROI is SBMR, SRAA, and WAAF and the proposed Helemanō Trail, with a 164-foot (50-meter) buffer on either side of the trail. The ROI was determined by analyzing the extent of potential impacts of routine military training activities and foot maneuvers. Since the potential effects of fire covered the largest area and included the areas affected by the introduction of weeds, noise, trampling, soil erosion, and all other impacts, the ROI was delineated using the fuel types, human-made barriers, and topographic barriers to fire. The ROI is depicted in Figure 5-34.

Recovery Plan

There are recovery plans for 34 plant and 1 animal species that are known to or have the potential to occur within the SBMR ROI. These species are listed in Appendix I-1a.

Installation Overview

The ROI contains areas of dry cliff, montane wet, lowland wet, and lowland moist communities (R. M. Towill Corp. 1997b; USARHAW and 25th ID[L] 2001a). The three types of montane wet communities in these training areas are mixed fern/shrub, 'ōhi'a forest, and 'ōhi'a shrubland. There is also a small lowland dry shrubland area.

Main Post

The Main Post is in central O'ahu and covers over 8,860 acres of land. It shares boundaries with the Kamehameha Highway to the east, private land and Mount Ka'ala Natural Area Reserve to the north, Wai'anae Kai Forest Reserve to the west, and Lualualei Naval Reservation and private and state-owned land to the south. Botanical surveys to identify rare plants, communities, and potential threats to these resources have been conducted intermittently since 1977. HINHP conducted a comprehensive biological survey from 1992 to 1993. The Center for Environmental Management of Military Lands (CEMML) conducted an additional comprehensive botanical survey in 1997. In addition, the Army's environmental division routinely monitors and surveys for rare and listed plant species. These reports provided the foundation for much of the botanical information currently in use to describe this area. South and east of the Main Post is the SRAA.

The vegetation on the Main Post includes residential and business and range areas that consist of highly managed nonnative vegetation like grasses, shrubs, and trees. The vegetation communities in the undeveloped border areas are mainly nonnative. Species include koa haole (*Leucaena leucocephala*), an invasive species of tree that regenerates rapidly after fire and is prone to forming dense thickets that exclude all other plants. Molasses grass (*Melinis multiflora*) also regenerates quickly after fire and can inhibit the growth of other



Schofield Barracks Military Reservation
Biological Region of Influence
O'ahu, Hawai'i
Figure 5-34

The Schofield Barracks Military Reservation
Region of Influence is largely based on potential
impacts from fire and trampling.

plants by its dense matting and by producing chemicals that discourage other plants from taking root. Christmas berry (*Schinus terebenthifolius*) is an aggressive rapidly spreading tree whose dense canopy shades out understory plants and creates single species stands. This tree is most common in the mesic (moderately moist) forests and is not thought to be a threat to the wetter native communities.

South Range Acquisition Area

The SRAA is adjacent to Del Monte agricultural land and the Honouliuli Preserve, a 3,962-acre forest area managed by The Nature Conservancy since 1990. The preserve is habitat for over 70 rare species and contains five vegetation community types that are native to Hawai'i (HINHP 1994). The proposed acquisition land consists mainly of lowland dry shrubland and grassland and agricultural fields. The native natural communities and sensitive species are mostly restricted to the upper elevations of the Wai'anae Mountain range included in or adjacent to this proposed acquisition area.

A 0.3-acre dry cliff area is in the southwest portion of the SRAA, near the border of Honouliuli Preserve. The dominant vegetation in these communities is often 'ōhi'a (*Metrosideros polymorpha*) or lama, with understory shrubs like 'a'ali'i and 'akoko. Grasses can be native or introduced.

East Range

SBER is in central O'ahu, and shares boundaries with the town of Wahiawā to the northwest, Kamehameha Highway to the west, Kahana Valley to the east, KLOA to the north, the USFWS James Campbell National Wildlife Refuge and private agricultural and forestland to the south. SBER contains native moist and wet forest types toward the Ko'olau Summit. These communities change to predominantly nonnative vegetation in the lower elevations. SBER covers 5,145 acres.

Wheeler Army Airfield

WAAF, an airfield with runways and ancillary facilities, is between the Main Post and SBER. It is a developed area that contains mainly nonnative urban vegetation.

Vegetation

The following vegetation communities described below occur in multiple places of the SBMR, WAAF, and SRAA ROI, as shown in Figure 5-35.

The mixed fern/shrub community is a fairly restricted community in the topmost reaches of the Ko'olau Mountains, and rainfall generally exceeds 150 inches (381 centimeters) (USARHAW and 25th ID[L] 2001a). Common fern species in the area include *Sadleria* spp., *Cibotium* spp., pala'a (*Odontosoria chinensis*), and *Diplazium* spp. Common shrub species include manono (*Hedyotis* spp.), 'ōhi'a, 'ōhelo (*Vaccinium* spp.), and pū'ahanui (*Broussaisia arguta*). The only rare plant listed within this community at SBMR is O'ahu violet (*Viola oahuensis*).